

WHAT IS CLAIMED IS:

- 1 1. A method for switching, the method comprising:
2 receiving an indication of a failure of a primary storage subsystem at a switch,
3 wherein the switch couples a host to the primary storage subsystem and a secondary
4 storage subsystem; and
5 subsequently, directing a command from the host received at the switch to the
6 secondary storage subsystem for completion.

- 1 2. The method of claim 1, further comprising:
2 changing a source volume and a target volume in the command to correspond to
3 volumes in the secondary storage subsystem, wherein the source volume and the target
4 volume are for I/O operations, and wherein the changing is performed by a switching
5 application in the switch.

- 1 3. The method of claim 1, further comprising:
2 receiving a notification at the switch from a monitor application that traps an I/O
3 alert corresponding to the failure, wherein the monitor application is coupled to a
4 hardware unit coupled to the primary storage subsystem; and
5 holding an I/O request that resulted in the failure in a busy state at the monitor
6 application.

- 1 4. The method of claim 1, further comprising:
2 receiving a notification at a monitor application that the primary storage
3 subsystem is functioning properly, wherein the monitor application is coupled to a
4 hardware unit coupled to the primary storage subsystem; and
5 synchronizing data in the secondary storage subsystem to the primary storage
6 subsystem; and

7 directing a command from the host received at the switch to the primary storage
8 subsystem for completion.

1 5. A method for data replication, the method comprising:
2 receiving an I/O command at a switch from a host; and
3 if the I/O command is a write I/O, then writing data via the switch to a primary
4 storage subsystem and a secondary storage subsystem, wherein the switch couples the
5 host to the primary storage subsystem and the secondary storage subsystem, and wherein
6 the data written to the primary storage subsystem and the data written to the secondary
7 storage subsystem are the same.

1 6. The method of claim 5, further comprising:
2 if the I/O command is a read I/O, then reading the data from the primary storage
3 subsystem.

1 7. The method of claim 5, further comprising:
2 determining if a switching application in the switch is in an asynchronous mode;
3 and
4 if the switching application is in an asynchronous mode, then:
5 (i) writing the data to the primary storage subsystem;
6 (ii) writing the data to a buffer in the switch; and
7 (iii) copying the data from the switch to the secondary storage subsystem.

1 8. The method of claim 5, further comprising:
2 determining if a switching application in the switch is in a synchronous mode; and
3 if the switching application is in a synchronous mode, then writing the data to the
4 primary storage subsystem and the secondary storage subsystem substantially
5 simultaneously.

1 9. The method of claim 5, wherein the primary storage subsystem and the
2 secondary storage subsystem comprise a plurality of logical storage units, wherein the
3 primary storage subsystem and the secondary storage subsystem include the same data.

1 10. The method of claim 5, wherein in the event of a failure of the primary
2 storage subsystem, a switching application in the switch directs a subsequent I/O
3 command from the host to the secondary storage subsystem.

1 11. A system for switching, the system comprising:
2 a primary storage subsystem;
3 a secondary subsystem;
4 a switch, wherein the switch couples a host to the primary storage subsystem and
5 the secondary storage subsystem;
6 means for receiving an indication of a failure of the primary storage subsystem at
7 the switch; and
8 means for directing a command from the host received at the switch to the
9 secondary storage subsystem for completion.

1 12. The system of claim 11, further comprising:
2 means for changing a source volume and a target volume in the command to
3 correspond to volumes in the secondary storage subsystem, wherein the source volume
4 and the target volume are for I/O operations, and wherein the changing is performed by a
5 switching application in the switch.

1 13. The system of claim 11, further comprising:
2 means for receiving a notification at the switch from a monitor application that
3 traps an I/O alert corresponding to the failure, wherein the monitor application is coupled
4 to a hardware unit coupled to the primary storage subsystem; and
5 means for holding an I/O request that resulted in the failure in a busy state at the
6 monitor application.

1 14. The system of claim 11, further comprising:
2 a hardware unit coupled to the primary storage subsystem;
3 a monitor application coupled to the hardware unit;
4 means for receiving a notification at the monitor application that the primary
5 storage subsystem is functioning properly; and
6 means for synchronizing data in the secondary storage subsystem to the primary
7 storage subsystem; and
8 means for directing a command from the host received at the switch to the
9 primary storage subsystem for completion.

1 15. A system for data replication, the system comprising:
2 a primary storage subsystem;
3 a secondary subsystem;
4 a switch, wherein the switch couples a host to the primary storage subsystem and
5 the secondary storage subsystem;
6 means for receiving an I/O command at the switch from the host; and
7 means for writing data via the switch to the primary storage subsystem and the
8 secondary storage subsystem if the I/O command is a write I/O, wherein the data written
9 to the primary storage subsystem and the data written to the secondary storage subsystem
10 are the same.

1 16. The system of claim 15, further comprising:
2 means for reading the data from the primary storage subsystem if the I/O
3 command is a read I/O.

1 17. The system of claim 15, further comprising:
2 means for determining if a switching application in the switch is in an
3 asynchronous mode, wherein if the switching application is in an asynchronous mode,
4 then performing:

- 5 (i) writing the data to the primary storage subsystem;
- 6 (ii) writing the data to a buffer in the switch; and
- 7 (iii) copying the data from the switch to the secondary storage subsystem.

1 18. The system of claim 15, further comprising:
2 means for determining if a switching application in the switch is in a synchronous
3 mode, wherein if the switching application is in a synchronous mode, then writing the
4 data to the primary storage subsystem and the secondary storage subsystem substantially
5 simultaneously.

1 19. The system of claim 15, wherein the primary storage subsystem and the
2 secondary storage subsystem comprise a plurality of logical storage units, wherein the
3 primary storage subsystem and the secondary storage subsystem include the same data.

1 20. The system of claim 15, wherein in the event of a failure of the primary
2 storage subsystem, a switching application in the switch directs a subsequent I/O
3 command from the host to the secondary storage subsystem.

1 21. An article of manufacture for switching, wherein the article of
2 manufacture is capable of causing operations, the operations comprising:
3 receiving an indication of a failure of a primary storage subsystem at a switch,
4 wherein the switch couples a host to the primary storage subsystem and a secondary
5 storage subsystem; and
6 subsequently, directing a command from the host received at the switch to the
7 secondary storage subsystem for completion.

1 22. The article of manufacture of claim 21, the operations further comprising:
2 changing a source volume and a target volume in the command to correspond to
3 volumes in the secondary storage subsystem, wherein the source volume and the target

4 volume are for I/O operations, and wherein the changing is performed by a switching
5 application in the switch.

1 23. The article of manufacture of claim 21, the operations further comprising:
2 receiving a notification at the switch from a monitor application that traps an I/O
3 alert corresponding to the failure, wherein the monitor application is coupled to a
4 hardware unit coupled to the primary storage subsystem; and
5 holding an I/O request that resulted in the failure in a busy state at the monitor
6 application.

1 24. The article of manufacture of claim 21, the operations further comprising:
2 receiving a notification at a monitor application that the primary storage
3 subsystem is functioning properly, wherein the monitor application is coupled to a
4 hardware unit coupled to the primary storage subsystem; and
5 synchronizing data in the secondary storage subsystem to the primary storage
6 subsystem; and
7 directing a command from the host received at the switch to the primary storage
8 subsystem for completion.

1 25. An article of manufacture for data replication, wherein the article of
2 manufacture is capable of causing operations, the operations comprising:
3 receiving an I/O command at a switch from a host; and
4 if the I/O command is a write I/O, then writing data via the switch to a primary
5 storage subsystem and a secondary storage subsystem, wherein the switch couples the
6 host to the primary storage subsystem and the secondary storage subsystem, and wherein
7 the data written to the primary storage subsystem and the data written to the secondary
8 storage subsystem are the same.

1 26. The article of manufacture of claim 25, the operations further comprising:

2 if the I/O command is a read I/O, then reading the data from the primary storage
3 subsystem.

1 27. The article of manufacture of claim 25, the operations further comprising:
2 determining if a switching application in the switch is in an asynchronous mode;
3 and
4 if the switching application is in an asynchronous mode, then:
5 (i) writing the data to the primary storage subsystem;
6 (ii) writing the data to a buffer in the switch; and
7 (iii) copying the data from the switch to the secondary storage subsystem.

1 28. The article of manufacture of claim 25, the operations further comprising:
2 determining if a switching application in the switch is in a synchronous mode; and
3 if the switching application is in a synchronous mode, then writing the data to the
4 primary storage subsystem and the secondary storage subsystem substantially
5 simultaneously.

1 29. The article of manufacture of claim 25, wherein the primary storage
2 subsystem and the secondary storage subsystem comprise a plurality of logical storage
3 units, wherein the primary storage subsystem and the secondary storage subsystem
4 include the same data.

1 30. The article of manufacture of claim 25, wherein in the event of a failure of
2 the primary storage subsystem, a switching application in the switch directs a subsequent
3 I/O command from the host to the secondary storage subsystem.